Towards Auction-Based Function Placement in Serverless Fog Platforms

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Serverless FaaS is very promising for the edge

VMs or containers

FaaS

Higher utilization of scarce edge resources
What happens when an edge node is overloaded?
How to pick a request for offloading?

Idea:
• Let application developers bid on resources during deployment.
• When resources run low, nodes offload the request with the lowest bid.

Benefits:
• Decision is entirely local (=> it scales!)
• Easy to implement
• Maximizes profits for edge nodes
• Efficient resource allocation
• Separate bids for storage and execution provides fine-grained control
Bidding on storage

I’m willing to pay X$/h if you store the executable for this function.

Function Developer

Compute Node

Is there sufficient space?

Store it.

Yes

No

Decide which executable to store.
Bidding on execution capacity

At deploy time

I'm willing to pay X$ per execution.

Function Developer

At run time

Is there sufficient capacity for all requests?

Yes

Execute all

No

Pick execution subset

Execute subset

Offload others towards cloud
In the paper: More details and...

- Discussion of basic strategy
- Call for further research

Simulation-based evaluation
Questions?

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